

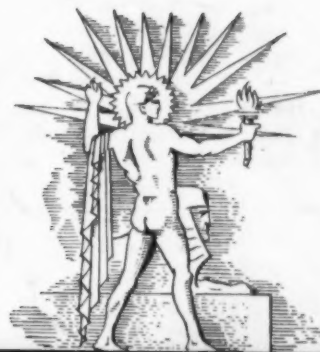
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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE.



May 28, 1938

Great American

See Page 345

A SCIENCE SERVICE PUBLICATION

Do You Know?

More than 30 different disease germs and parasitic worms can be carried by flies.

Birds are said to have three kinds of language: alarm notes, call notes, and songs made of call notes joined together.

A new kind of paint made in Germany is said to be fireproofed by having nitrogen salts and synthetic resin mixed in it.

Birds are like humans—a little grouchy before breakfast—says one government scientist, from his own backyard observations.

In a recent survey at American colleges, it was reported that one student in every four is handicapped by serious eye defects.

A soap substitute exhibited at Leipzig Fair is a perfumed jelly in a tube, used without water or towel, according to the manufacturer's claim.

A health official in India states that no country with a malaria problem has discovered a quick, effective, and sufficiently inexpensive way of controlling this disease in rural areas.

An archaeologist points out that although Sumerian people and Semites fought desperately in Babylonia over 4,000 years ago, that was no racial war, and the city-states that were struggling for supremacy in the conflict showed no racial enmity.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

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Do balloons and kites ever sail the seas? p. 352.

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Are "pep pills" good for depressed minds? p. 348.

PSYCHOLOGY

In what way does an autocratic government change the attitudes of its citizens? p. 344.

Large floating islands covered with jungle growth are sometimes called the icebergs of the Amazon.

Luminous paints are more widely used in Europe than in this country, partly because streets and buildings are less well lighted.

The green and white marble called Verde Antique, which Augustus used in making Rome beautiful, was obtained from Greek quarries.

In ancient Egyptian funeral wreaths, botanists can see no less than 20 species of the flowers grown in that day.

A century ago it took 83 out of 100 workers in the United States to produce farm crops; today, with machinery, 17 out of 100 are sufficient.

One problem of air conditioning in the tropics is that buildings are often constructed without glass in windows, and with numerous openings.

SCIENCE NEWS LETTER

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GENERAL SCIENCE

New Declaration of Faith Is Aimed at Intolerance

European Civilization Can Be Preserved Only By Devoting Energy Toward Developing the Good in It

A NEW scientist's oath, pledging "no loyalty greater than that to the task of preserving truth, toleration, and justice in the coming world order" is being circulated in London as a defense against the advance of intolerance.

Presented to the British scientific world through prominent publication in the pages of *Nature*, leading science journal, (May 7) the author, L. L. Whyte of London, hopes that cultural, educational and technical institutions throughout the world will offer it to their members as a declaration of scientific faith. He visualizes the new oath as playing a role similar to that of the Hippocratic Oath of more than 2000 years ago, which promoted standards among medical practitioners.

"In the last few years several of the most enlightened communities of Europe have been dispersed, and the principles of justice and tolerance openly challenged," Mr. Whyte explains. "More than this, the conception of the objective truth which is the basis of science and of all human progress is being steadily undermined. European civilization has had profound failings, but we must

either devote our energies to maintaining and developing what is good in it or accept a collapse into a barbarism of violence and intolerance.

"The greatest danger today lies in the complacent illusion—seen so often in history and now prevalent in the more fortunate countries—that civilized traditions are an inalienable legacy which can be enjoyed indefinitely by generations which are no longer ready to make sacrifices for them.

"It is my belief that men in all countries who do not wish to betray the tradition they have inherited must now discard false modesty and announce clearly for what they stand. We do not deserve and we shall not long retain the fruits of a civilization to which we do not declare and prove our active loyalty."

Science News Letter, May 28, 1938

GENERAL SCIENCE

Science Gives New Motives For Finer and Better Lives

THE GREAT cry of economics and politics has been for a better distribution of the material goods that we

use in our daily life—food, clothing, shelter, and a million other things that money is used to get.

In the intellectual and sociological circles, another great fundamental demand is beginning to make itself heard. All the "goods"—good things—of life must be more widely available to the people. This means the facts of science, the educational facilities, the fine thinking and feeling that provides the motivation of a new and better order of living.

A complication pointed out by Prof. Eduard C. Lindeman is that there exists at the present time no common pattern of values which may be said to serve as a guide to contemporary civilization. Dr. Lawrence K. Frank feels that theologies have not been made meaningful for human conduct. He wants someone to interpret science in terms of "Now I lay me down to sleep."

The new culture, contrasting with older views that are ingrained for most of us and the system under which we live, shows that it is not necessary "to sacrifice others to personal salvation." The old obedience to ethical and legal rules, come what may, is shifted in face of the query "What does this do to others?" Man is coming to recognize that culture is man-made, and that the source of ultimate authority is man himself.

The new patterns that are coming out of the minds of the thinkers into the practical world impose great obligations and opportunities upon the scientists who are reordering our world whether we want it or not. Especially concerned are those who can tell us how to control our thoughts, emotions and conduct—those least charted science areas.

Science News Letter, May 28, 1938

SCIENTISTS' OATH

I AM the inheritor of the tradition of civilization which has proved more lasting than empires. Whenever I use the language or the products of science I unconsciously pay homage to the countless men for whom no sacrifice was too great in the struggle to develop the human mind and establish the truth. Toleration and freedom are the heart of this tradition; for individual thought and love of truth are the basis not only of science, but also of justice and of civilization.

I DECLARE my loyalty to this tradition, my belief in the freedom of the individual to develop his talents for the enrichment of the community, and my conviction that man's community is now the whole human race, within which each nation must play its characteristic part. The natural balance between personal freedom and the proper demands of society, which is the life and health of civilization, is today doubly threatened: in certain societies by the denial of freedom and in the democratic countries by the irresponsibility of individuals. In the face of this threat:

I PLEDGE myself to use every opportunity for action to uphold the great tradition of civilization, to protect all those who may suffer for its sake, and to pass it on to the coming generations. I recognize no loyalty greater than that to the task of preserving truth, toleration, and justice in the coming world order.

PSYCHOLOGY

School Governments Show Autocracies Breed Hate

PERHAPS nowhere but in America could this happen.

Miniature governments—autocratic, democratic, and anarchistic—have been built, using school children as the citizens, to find out experimentally just what effect government has on the individual.

An autocratic, dictatorial government breeds hostility, it is clearly shown by this experiment, reported to the Midwestern Psychological Association by Dr. Kurt Lewin, of the Iowa Child Welfare Research Station of the University of Iowa. The amount of hostility expressed by members of the autocratic

group is 30 times as high as that among the citizens of the democracy.

Citizens in an autocracy cannot work together. Even when cooperative work groups were set up by the "dictator," they soon would break down. In the democracy, cooperation developed spontaneously.

More individual desire to dominate is evident in the autocracy, more feeling of "I-ness," more personal feeling.

Constructiveness is higher in the democracy; in the autocracy it falls down quickly when the "dictator" is not present.

In the autocracy, the hostility of the group is likely to center on a scapegoat who is treated so badly by the whole

group ganged together that he finally becomes a "refugee" from the group. After his departure, another member becomes the scapegoat.

Contrary to what might be guessed, an anarchy was found to be nearer to the autocracy than to the democracy in effect on the citizens. The resemblance was particularly great in regard to the hostility between members.

"In autocracy the tension seems to be due to lack of freedom," Dr. Lewin interpreted. "In laissez faire, tension seems to be due to the anarchic structure of the situation which prevents long range planning and lacks meaningful time perspective both for the group and the individual."

Science News Letter, May 28, 1938

ARCHAEOLOGY

Archaeologists Dig Up King Solomon's Seaport

New Finds Indicate That Sheba's Queen Visited King For Political Reasons, Not Because of Romance

THAT popular idea about the Queen of Sheba visiting King Solomon to enjoy his intellectual conversation may be all wrong. Archaeologists have unearthed King Solomon's seaport, where he built his ships. They suspect Sheba's Queen came up to Jerusalem in alarm over the growing power and trade expansion of the Israelite empire. It was a Hitler-visits-Mussolini affair, back in the tenth century B. C.

Excavation of Solomon's port, the Bible town of Ezion-geber on the shores of the Red Sea at Tell el-Kheleifeh, is reported by Dr. Nelson Glueck, director of the American School of Oriental Research in Jerusalem. The president of the American Schools of Oriental Research, Prof. Millar Burrows, of Yale, announcing the discoveries today, said that the lost site was re-discovered at the northern end of the Gulf of Aqaba.

The mystery of finding the ruins half a mile inland is believed solved by the fact that north winds continually blow sand from the Arabah, and the seashore is widened slowly year by year.

When King Solomon built his fleet there, his vessels could trade directly with southern Arabia and indirectly with India. Prof. Burrows points out that "it is probable that the visit of the Queen of Sheba, which is narrated immediately

after the construction of the merchant fleet, was inspired in part by the fear that Solomon's marine enterprise would diminish her revenues from the trade which passed by caravan through her territory."

Why the wise Bible king chose a port exposed to north wind blasts is now understood by the archaeologists. Excavation reveals a big copper smelting and refining plant well preserved, and the ancient workers are believed to have used the constant draft as an aid in working their furnaces. The strong draft still blows through the flue holes in the rooms.

The seaport flourished from the tenth to the eighth century B. C., according to finds unearthed in the ruins. The inhabitants worked at ship building, copper smelting, fishing, and manufacture of such copper implements as spear heads and nails.

So important are Dr. Glueck's discoveries considered that another campaign is planned for next year. The expedition has been supported by a grant from the American Philosophical Society.

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A Czechoslovakian anthropologist has made a study of types of eyebrows and eyelashes.



MAN-MADE LIGHTNING

This is the half-million-volt Westinghouse surge generator in operation at the Franklin Institute. The artificial lightning bolt shattered a four-inch billet of wood so quickly that only the top could be pictured; the rest was instantaneously splintered and knocked out of camera range.

ENGINEERING

Half Million Volt Strokes Of Man-Made Lightning

A HALF MILLION volts of artificial lightning crash into tiny model houses to show how electrical science protects real homes against the menace of natural lightning strokes in a demonstration which is a regular Franklin Institute exhibit just opened with Westinghouse cooperation.

The man-made lightning, in one test, strikes a section of tree trunk, scatters it into kindling and shows how a tree or pole is split by real lightning.

In another test stands a small house, electrically illuminated. Near the house, on a pole, is a transformer as in real life. The arrival of the lightning stroke creates a high-voltage arc at the transformer and the lights in the house go out. In contrast, when a lightning arrester is placed across the transformer, the lights in the house only blink when a 500,000-volt bolt hits the electric wiring.

Science News Letter, May 28, 1938

When the element selenium is heated to 70 degrees Centigrade it is found to have elastic properties.

GENERAL SCIENCE

Acute Danger of Extinction Of Rare Old Plants Cited

Gathering at Franklin Institute Commemorates the Founder by Unveiling Statue and Scientific Program

See Front Cover

SCIENCE and mankind are in danger of losing by extinction a large number of rare old plants counted among the most interesting from the point of view of students of the history of life.

Many rare old plants, "fugitive aristocrats," face the same danger of extinction by advancing man and from crowding by hardier, more aggressive plants that wiped out a rare plant of Benjamin Franklin's day, the *Franklinia*. Prof. Merritt L. Fernald, director of the Gray Herbarium at Harvard University, declared, speaking on a science program at the Franklin Institute.

The program was part of dedicatory exercises lasting three days marking unveiling of a great statue of Benjamin Franklin executed by James Earle Fraser. The statue, which can best be compared in its proportions with the Lincoln Memorial in Washington, will honor an early American whose acute observation and general scientific abilities have won him a permanent place in the annals of science. A model of the statue is pictured on the front cover of this week's SCIENCE NEWS LETTER.

Prof. Fernald listed a number of the plants facing extinction and some factors tending to wipe them out.

Pollution Danger

Rare estuary plants, growing in the slightly brackish tidewater at river mouths, and unique because of their ability to withstand the rapidly changing salt-and-fresh character of the river water, are in danger of extinction by newcomers. Twenty years ago such vegetation was abundant in the mouths of many rivers. But today the vegetation is being crowded out of the banks of the St. Lawrence River from Montreal to Quebec by seeds of hardier plants brought over on transatlantic steamers.

"Instances of the destruction of the last or only living colonies of other rare plants by the blasting away of ledges or the building of dams will occur to every experienced field-botanist; and the

pollution of rivers by strong chemicals from pulp-mills and factories has been as fatal to the native flora of river-gravels as to the salmon, shad and other important fishes of the river-channels."

Many of these plants are biologically old and throw much light on the past history of the earth; that is why, Prof. Fernald explained, their loss is mourned particularly by the scientist.

"Human Engineering"

Prof. Thomas Hunt Morgan of the California Institute of Technology, Nobel prize winner and discoverer of the gene, who also addressed the gathering suggested the term "human engineering" for the science of heredity as applied to man.

Such a science, Prof. Morgan indicated, will become increasingly important in the future as a result of further studies of genetics, the science of heredity, detailing more and more clearly the mechanism by which son and daughter resemble and yet do not resemble father and mother.

Electricity Still a Puzzle

Dr. Willis R. Whitney, vice-president of the General Electric Company in charge of research, and a leading student of electricity for half a century, admits he still doesn't know just what man's most useful servant and one of science's most useful tools is.

Most scientists hold the same opinion, he indicated. And those who think they know what it is have all too often to change their minds as a new experiment turns up additional facts which just do not fit previous theories.

Dr. Whitney added, however, that ignorance of the "essence" of electricity doesn't seem to have had any harmful effect as far as practical and experimental results from its use are concerned.

"The only safe way with electricity is to expect a new picture whenever new tools for better measurement are discovered," he declared.

Addressing his talk to tomorrow's

generations, the scientist said: "I would like to encourage boys to realize the flexibility of electricity. Fortunately it is difficult to draw a perfect picture of any inside mechanism of Nature. Electricity is no exception. Everyone who has tried it has had his picture well painted over by later artists. On the other hand the results of even the simplest experiments remain unaltered, and so constitute the permanent assets."

Redefine Term "Acid"

Scientists are redefining the term "acid" to fit a host of new experimental facts and in accordance with modern theories of the structure of the atom, Prof. Gilbert N. Lewis, dean of the College of Chemistry of the University of California and one of America's outstanding physical chemists, declared. He said that scientists today are using the term, which describes one fundamental classification of chemical substances, in a much broader sense than before.

It no longer means only a "hydrogen ion, in a single solvent, water." A hydrogen ion is an atom of hydrogen minus the single electron outside the nucleus, and having therefore, a positive charge.

Today chemists and physicists are defining this basic term as describing a molecule which is capable of receiving an electron pair.

The change has been brought about, Prof. Lewis stated, in order to take account of the fact that certain substances show definitely acid behavior when they are dissolved in solvents other than water.

The same broad considerations apply to the other great classification of chemical substances, bases, as well.

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ANTHROPOLOGY

Rescue of Lost Apaches Would Require Cooperation

RESCUE of the lost Apaches hiding in northern Mexico would call for joint efforts of United States and Mexican officials.

Now that existence of the wild, skin-clad Indians has been made known by Dr. Helge Ingstad, Norwegian ethnologist, friends of the Apache tribe, both in the Indian Service and outside, are concerned for the fate of these castaways.

Dr. Ingstad, who reported sighting five adults and one baby, was unable to talk with them because they run like deer and are accustomed to shoot, or be

shot, on sight. It is believed the wild band may number 40 individuals, the survivors or descendants of some fierce Apache Indians who refused to surrender to white men back in the 1880's. The lost band represents one of the strangest chapters in United States history—Indians who have been driven by civilization down into primitive isolation, only one stage higher than wild animal life. These Apaches retreated into the Sierra Madre Mountains of Mexico, 150 miles south from Douglas, Arizona, and there they roam on foot or ride stolen horses, and eat desert plants and wear animal skins.

Rumors which drift up to the Mescalero Apache reservation in New Mexico has said that women lead the pathetic band of castaways, possibly because the men have died hunting or fighting. Dr. Ingstad reported that the

wildest of the adults he saw appeared to be women. It is also rumored that a white man, long ago kidnaped by Indians, is with the band, but this remains unverified.

Indians on Southwestern reservations have expressed concern to the United States Office of Indian Affairs over the plight of the lost band. So far, however, no official representations have been made, and any action of returning the group to the United States would have to be arranged, it is supposed, with cooperation of Mexican authorities.

Dr. Ingstad is anxious to contact the lost band in hope of learning important facts about Apache traits. He holds the theory that Apache Indians parted from Arctic tribes and moved southward, and that their ancient migration may be traced when the old type of Apache culture is better understood.

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ANTHROPOLOGY

Famed Java Ape-Man Lived Past His Time

Evidence of Cannibalism Raises Question as to Whether Neandertaloids Regarded Ape-Man as Game

JAVA's famed ape-man, *Pithecanthropus erectus*, was a person who was born, not "thirty years too soon" but something like a million years too late. He represented a race that belonged properly to the Pliocene geologic period (the time just before the great Ice Age of the Pleistocene) but that survived in the favoring forests of the East Indies while ice sheets lay for a million years over most of what is now the North Temperate Zone.

This is the opinion of Dr. G. H. R. von Koenigswald, discoverer of the latest-found *Pithecanthropus* remains, as expressed in a letter to Dr. John C. Merriam, president of the Carnegie Institution of Washington. Dr. von Koenigswald's recent researches have received the support of the Carnegie Institution.

The total *Pithecanthropus* population now in the hands of scientists in Java consists of three skulls: the famous original find of Dr. Eugene Dubois, dug up in 1891, the new skull found by Dr. von Koenigswald last summer, and a child's skull discovered in 1936, which went largely unheralded in public notice. The brain-space in the latter is less

than that of a normal modern baby of eighteen months.

Dr. von Koenigswald's recently found adult skull gives a definite date to the Java ape-man. This has been a matter of dispute in the case of Dr. Dubois' find, for the earlier skull was excavated while the Dutch physician was away from the Trinil gravel pit and he never was able to ascertain definitely from his native assistants just where they found it.

However, the new skull was found while Dr. von Koenigswald himself was on the spot, in a gravel bed known by the elephant bones and other tropical fossils it contains to be of mid-Pleistocene date, so it appears fairly certain now that *Pithecanthropus* lived in the middle of the Ice Age—about half a million years ago.

A piece of jaw, massively built and still containing three big molar teeth, found near the braincase by Dr. von Koenigswald, has great significance in connection with the problem of human evolution, if the young German scientist's interpretation of the fragment is correct. He considers it to be definitely *Pithecanthropus*, and further holds that

it is very closely related to the famous Heidelberg or Mauer jaw found many years ago in Germany and now regarded by some anthropologists as belonging to a race ancestral to man. If this chain of opinion is sound, *Pithecanthropus* must be given a limb to roost on, in our own family tree.

An incident that combines the comic and the exasperating occurred when the native workmen dug out the new skull. Although Dr. von Koenigswald was at the site he did not have his eye on this particular group of diggers. So the men promptly broke the skull, which was whole when they found it, into forty pieces, because they thought they would get more "per piece" than they would for one big bone. So the shattered skull had to be laboriously put together again.

Meanwhile, other excavations in Java have been turning up the remains of several skulls of a heavy, primitive type with characters resembling those of the well-known Neandertal skulls of Europe and the Near East. They have the characteristic massive eyebrow ridges of the Neandertal type, and resemble the ancient European skulls also in having a narrower region behind these ridges.

Especially suggestive is the fact that none of these skulls has been found unbroken. They are intact on top, but the facial skeleton is missing and the floor of the brain cavity is broken away. Exactly the same condition is found in skulls left after cannibal feasts by certain still-wild head-hunter tribes of the present day in Borneo, who regard human brains as a special delicacy.

These shattered Neandertaloid skulls are considered by Dr. von Koenigswald as approximately contemporary with the much more primitive *Pithecanthropus*. The Neandertaloids were a more advanced physical type and they had crude but effective stone implements and weapons. Since they apparently had no scruples about killing and eating each other, an interesting speculation is suggested:

Did these Javanese Neandertaloids, perhaps, regard their ape-man neighbors not as fellow human beings but as just another kind of game animals?

Anthropology has no answer to this question as yet. But in the meantime it can add zest to the weary job of river-gravel digging.

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A European physician who has helped organize health centers in six Chinese provinces declares that modern Chinese doctors "are the equal of the medical men in any other part of the world."



MOLLIE TRIES AGAIN

Only three weeks after the death of the first two jackass penguins (no joke!) ever hatched in the United States, Mollie and Moe, clowning immigrants at the National Zoological Park in Washington from an island off South Africa, started work on another pair of eggs. Here Mollie is taking her turn incubating the eggs. Now near the end of the 40-day incubation period, she is doubtless listening anxiously for the sound of pecking from inside the shell.

AERONAUTICS—CONSERVATION

Germany Could Not Store Helium, Authorities Hold

Diffusion of Gas Through the Cells Makes Necessary 100 Per Cent Replacement During Year; Won't Rob Us

IT WOULD be virtually impossible for Germany to build up a secret supply of helium for military airship use under the terms of the Helium Act of 1937 enabling the sale of the light, buoyant gas to foreign companies for commercial purposes.

This is the considered belief of experienced American authorities, who because of the present controversy in government circles, must remain anonymous.

The request for the purchase of 17,900,000 cubic feet of helium gas for the use of the new German zeppelin, the LZ-130, is not excessive, these experts declare.

Here is how this giant figure breaks

down in airship operating practice:

The capacity of the LZ-130 is 7,063,000 cubic feet. For 95 per cent. inflation at take-off, it will need about 6,700,000 cubic feet.

On the Akron and Macon, U. S. Navy dirigibles, it was found that the diffusion of helium through the gas cells and other losses amounted to about 100 per cent. during a year's time. While naval airship operation differs in some respects from commercial oceanic operation, such figures represent the best estimate that can today be made of such needs. In summary, a year's operation of the LZ-130 will require an additional 6,700,000 cubic feet of gas.

This amount, however, will not all

be sent to Germany, if the export license is granted. Half of it will be used at Lakehurst, N. J., U. S. naval airship station and American terminus for the transatlantic line. There it will be under the control of the U. S. Navy. Moreover, the German half of this replenishing gas need not be delivered all at one time, it is pointed out. It could be sent over, month by month, in small amounts sufficient only for immediate needs.

After primary inflation and the estimate of replenishment needs for a year are considered, only 4,500,000 cubic feet of gas needs to be accounted for. This amount is a reasonable estimate of the emergency needs of an airship service.

A single large gas cell on the LZ-130 may hold nearly as much as a million cubic feet. An accident, causing severe leakage in such a cell, would involve a major loss which could only be replenished from emergency supplies. Half of this emergency 4,500,000 cubic feet, it is pointed out also, would likewise be in the United States.

It would be only a matter of common sense, the experts assert, on the part of operators conducting scheduled oceanic airship service to maintain a reserve supply adequate to such contingencies. Some of this supply will always be in transit.

Finally, it should be remembered that the U. S. Navy would have two professional airship observers aboard the LZ-130 during flight who could estimate accurately the needs of the airship at the end of a transatlantic flight and report to American helium authorities.

Another charge disposed of by airship experts for Science Service is that the sale of helium to Germany for commercial purposes is seriously depleting rare American natural resources.

Proved helium resources of the United States would last for several generations even if many airships were built. Helium, it is true, is a rare gas, but its uses are relatively limited. The estimate of the length of time helium resources will last is several times larger than the estimate for American petroleum resources which, even optimistically, are not considered sufficient for more than a few decades.

Now in sight are 25,000,000,000 cubic feet of helium and there are other fields which unquestionably hold additional supplies. Cliffside Field in Potter County, Texas, alone has an estimated 1,800,000,000 cubic feet of helium, enough to last more than 100 years if used at the rate based on the present request of the German Zeppelin company for helium for the LZ-130.

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MEDICINE

Sulfanilamide Successful In Treating Animals

SULFANILAMIDE, the chemical remedy which has helped thousands of human patients recover from infections ranging from blood poisoning to gonorrhea, promises to help laboratory animals when they get sick.

News that the "sniffles," a form of pneumonia responsible for a high mortality in all laboratory rat colonies, can be successfully treated with the new chemical remedy comes from Dr. Norman R. F. Maier of the University of Michigan.

In a report to the current issue of *Science*, Dr. Maier reports (*Science*, May 13) that out of 14 rats with "sniffles" who were given sulfanilamide daily, 12 recovered permanently and two died. In a group of seven untreated animals all died after varying lengths of time.

No harmful effects from the drug were noted although some animals received it daily for nearly two months.

Science News Letter, May 28, 1938

CHEMISTRY

Vitamin Alphabet Shows Signs of Shrinking

HERE's good news for those who have given up hope of being able to learn the vitamin alphabet since it has outgrown the ABC stage and taken on not only more and more letters but numerals as well. The vitamin alphabet now shows signs of shrinking.

From a vitamin expert and professor at Yale University School of Medicine, Dr. George R. Cowgill, comes the news that many claims for the existence of new vitamins have been shown to be untenable. What appeared to be new vitamins were just extra quantities of some of the old familiar ones.

Dr. Cowgill cited the case of the vitamin B complex as an example. Originally there was just one vitamin B, found in rice polishings, whole grains and cereals and yeast. Lack of this vitamin caused the severe nerve disorder, beriberi, in man and a similar condition, polyneuritis, in fowl.

After the original discovery, scientists continued to study this vitamin and the more they studied the longer grew the list of B vitamins. Finally there were vitamins B₁, B₂, (also called vitamin G by American scientists), B₃, B₄, B₆, B₉, and two more substances called filtrate factors. All of them were considered

necessary for normal growth and each one was believed to have in addition certain special effects, or rather lack of each one was believed to result in separate nutritional disorders. It was all very confusing and a special committee of scientists had to be set up to straighten out the matter of names alone.

Now, however, things are growing simpler. The chemical structure of vitamin B₁ is known and the vitamin is called either thiamin, its chemical name, or simply vitamin B. It is the beriberi preventive. B₂ turns out to be riboflavin and instead of being a pellagra preventive is a preventive, Dr. Cowgill states, of a degeneration of the spinal cord. The special effects of B₃ and B₄ are now known to be due, according to Dr. Cowgill, to a larger supply of B₁. The effect of B₆, noted in pigeons, has been explained on other grounds.

Science News Letter, May 28, 1938

PSYCHIATRY

Chemical "Pepper-Upper" Lifts Sick Minds

USE of a chemical "pepper-upper" so potent that it lifted mentally sick patients out of the depths of self-absorption and mental derangement was described by Dr. Eugene Davidoff of Syracuse Psychopathic Hospital at a Conference of New York "Up-State" Hospitals held at Marcy State Hospital near Utica, N. Y.

The "pepper-upper" is benzedrine sulfate, popular as an inhalant to relieve cold-congested noses and as "pep pills" to stimulate tired minds, although this latter use is decried by physicians.

At the Syracuse hospital this chemical has been given either alone or with a sleeping drug, sodium amytal, to 57 patients suffering from schizophrenia, one of the most widespread of mental ills. An improvement in two-fifths of these patients followed the new treatment. In reporting this, however, Dr. Davidoff warned that not enough time has elapsed to be certain that the improvement is real and lasting.

Benzedrine sulfate, he said, makes the patients more adaptable and more accessible to understanding, investigation and psychiatric treatment. It is an easy treatment to give and has less danger and fewer difficulties than either metrazol or insulin shock treatments, now widely used for schizophrenia patients. Dr. Davidoff believes the benzedrine treatment should be given further trial.

Science News Letter, May 28, 1938

IN SCIENCE

ENGINEERING

Batteryless Telephone Uses Voice and Magnet

A MAGNETIC telephone requiring no battery or other source of outside electric current for its operation has been developed by engineers of the Bell Telephone Laboratories, G. E. Atkins of the organization's staff reports.

Depending on voice vibrations to move an armature placed in the field of a permanent magnet for generating the current which carries speech, the same unit may be used as receiver or transmitter.

The instrument recalls early telephone receivers and transmitters which likewise were magnetic and used no outside source of current. They had, however, too low an output to be practical. It is only in recent years that knowledge of highly magnetic materials and structure has enabled practical use of this type of circuit, Mr. Atkins declares.

Independence of batteries or other outside power source makes the instrument extremely portable and suitable for use in places such as construction camps. A special portable unit weighs less than two pounds. A wall unit contains separate receiver and transmitter.

Science News Letter, May 28, 1938

CHEMISTRY

Wool for Clothing Is Made From Fish in Germany

GERMANY has added to her rapidly growing list of synthetic products a "fish wool" made from fish albumin and cellulose (*Industrial and Engineering Chemistry*).

Comparing favorably in strength, resistance to washing and wear resistance with good grade fiber made by the viscose process, which is widely used in the United States, the new product is precipitated from a solution containing 50 per cent. fish albumin and 50 per cent. cellulose.

When the solution is spun out, the cellulose coagulates first and the albumin later, producing a thread with a cellulose core and an albumin outer sheath.

Science News Letter, May 28, 1938

CE FIELDS

CHEMISTRY

Secret, Synthetic Oil Developed For Watches

A NEW, secret synthetic oil for aviation watches, clocks and naval and airplane instruments was announced at the meetings of the Horological Institute of America, professional society of watch-makers.

Its superior qualities at high and low temperatures and for long periods, were described by W. C. Trent of the aeronautical instrument section of the National Bureau of Standards. The formula of the oil is still secret and Mr. Trent refused to disclose its composition on advice of the Navy Department.

An extensive report of the tests performed on the new oil was given, however. It is non-gumming at lower temperatures, does not readily oxidize at high temperatures and has showed excellent performance in a 2,000-hour test, which is still in progress.

The new oil seems, at last, to supply the Navy with an oil which can be obtained in large quantities and which will have the superior properties of porpoise jaw oil which is now virtually non-existent in world markets. The decline of the whaling industry—which used to catch porpoises as a side line—is responsible for the scarcity of porpoise jaw oil.

Science News Letter, May 28, 1938

ARCHAEOLOGY

Dummies Found Wearing Rare Suits of Armor

A GREAT discovery of medieval armor has been made in an old church in Italy.

At this Church of the Madonna delle Grazie, near Mantua, there has been for centuries a gallery of dummy portrait figures, life size. From high niches on the wall, the figures look down. Armored knights, ladies, churchmen, one and all, these represent medieval people who gave thanks to the Virgin at some time for saving them from untimely death or from torture. They were there, on display, in 1555; for an Englishman

sent to Rome by Mary Tudor told of seeing the figures.

And now, a British armor expert, James G. Mann, has discovered that the knightly images in the church are wearing real armor, such as museums and collectors dream of, but scarcely expect to find in quantity.

Mr. Mann's attention was called to the statues by a friend who suspected that the armor might be real, and not papier mache, as every one supposed. Mr. Mann investigated, and reported to the British Society of Antiquaries that no less than 17 of the dummies wore real armor, and a good deal of it looked like fine fifteenth century Milanese craftsmanship, at that.

Not until last September, however, did the chance arise to clean the paint off the metal suits and assemble them properly. Sixteenth century folk who had prepared the figures had not been careful about matching fighting togs, most of which were old-fashioned to them.

With paint boiled off the metal, six complete suits of Gothic fifteenth century armor have been assembled, representing the period in armor history when fighting suits were most varied and the art of adapting protective metal to human machinery was most clever. The rest of the armor is of the sixteenth century, when harness became dressy, and was decorated in ingenious ways.

Science News Letter, May 28, 1938

GEOLOGY

Remotest Ancestors Of Mickey and Donald

DISCOVERY of the archancestors of Mickey and Donald was announced by Prof. Glenn L. Jepsen, of Princeton University.

All that remains of Number One Mouse, which dates back to the Paleocene age 80,000,000 years ago, are a few teeth. Prof. Jepsen discovered these in south central Montana in 1931, but only recently learned their significance. He now is certain that they came from a member of the rodent family and has named the animal *Paramys atavus*, meaning mouselike grandfather.

Parts of the left wing of a 50,000,000-year-old duck were discovered in northeastern Utah during an expedition under the auspices of Princeton University in 1936. The remains were unearthed from an Upper Eocene deposit by John Clark, now at the University of Colorado. Dr. Alexander Wetmore, of the U. S. National Museum, has built up a probable body structure around them.

Science News Letter, May 28, 1938

ANTHROPOLOGY

Sitting Bull "Tells All" In Autobiographies

SITTING Bull, big Sioux warrior, certainly enjoyed writing the story of his life—so Smithsonian scientists begin to think.

They have just received a third biography done in pictures by the noted Indian fighter. Two were drawn by Sitting Bull himself; the third is an 1872 copy, but the original of this was never seen by any white man. There may be more of Sitting Bull's literary work scattered around the country, the scientists suspect.

Science News Letter, May 28, 1938

GENERAL SCIENCE

American Museum Finances In Critical Condition

FACED with rising maintenance costs and sharply decreased operating income, the American Museum of Natural History is in critical financial condition, its president, F. Trubee Davison, reveals in his annual report.

Income from endowment and contributions to the Museum's maintenance and endowment fund have been reduced during the last few years, at the same time the cost of supplies in the daily running of the museum, one of America's most famous institutions, has increased materially, Mr. Davison reports.

Despite economies which included the drastic measure of paycuts for the entire staff, "approximately \$70,000 only is left for scientific and educational work" after fixed overhead and payrolls are met, his statement discloses.

The condition of the museum today is more critical than in 1936, when a \$10,000,000 ten-year development program to assure the institution's future was announced, despite a "most gratifying" response to the long-range drive, Mr. Davison points out.

In spite of sharply curtailed operating revenue, however, the museum was able to find backers for 34 expeditions it sent into the field in 1937. Twenty-three of the expeditions were in North, Central and South America, including the famous American Museum-Sinclair Dinosaur Expedition to Colorado and Wyoming. Headed by Dr. Barnum Brown, it made important 80,000,000-year old finds. The portion of the report dealing with the museum's scientific work was written by Dr. Roy Chapman Andrews.

Science News Letter, May 28, 1938

ASTRONOMY

Bright Evening Star

Venus Is Now Most Brilliant; June Brings Longest Day and Beginning of Summer When Sun Enters Cancer

By JAMES STOKLEY

MOST brilliant of all the stars or planets in view during June evenings is Venus, beautiful "evening star," visible in the northwest after sunset. Actually it is not a star, but a planet, and the one that most nearly resembles the earth. The only other planet seen these evenings is Mars, but this is rather faint, and sets soon after sunset, so that it will not be conspicuous. It is not shown on the maps.

Among the stars, the familiar Great Dipper, high in the northwest with handle uppermost, is a good place to start. The "pointers," the two stars in the lower part of the bowl, which indicate the pole star off to the right, are generally known. Not quite so familiar however, is the fact that if you follow the pointers in the opposite direction, you come right into the constellation of Leo, the lion, in the west. This group has two prominent parts. Below is the "sickle," a hook-shaped figure, with first magnitude Regulus at the end of the handle. Above is a triangle of stars, of which Denebola, supposed to indicate the lion's tail, is the brightest.

Still other stars can be found from the Great Dipper, this time with the aid of its handle. By following its curve to the south, one comes first to Arcturus, of the constellation Boötes, then to Spica, in Virgo, the virgin. Beyond is a group that is rather prominent even though it contains no very bright stars. This is Corvus, the crow, sometimes called the "cutter's mainsail," which it resembles more nearly than it does a bird.

Beautiful Vega Above

High in the eastern sky is Vega, of Lyra, the lyre, brightest star now visible. Below is Cygnus, the swan, otherwise known as the northern cross, containing first magnitude Deneb. To the right is Altair, in Aquila, the eagle.

In the northwest, near the horizon, is Capella, in Auriga, the charioteer, and to the left, Castor and Pollux, of Gemini, the twins, now making their last appearance of the season. But to take their place, we can see the scorpion, Scorpius,

to the southeast, in which appears the brilliant and ruddy Antares.

With the exception of Mars, all planets and stars mentioned are shown on the accompanying maps, depicting the skies as they appear at ten o'clock (standard time), at the first of June, and at nine o'clock at the middle. Two other planets, however can be seen later. Jupiter, nearly as brilliant as Venus, rises in the southeast shortly after midnight, in the constellation Aquarius. About 2:00 a. m. Saturn, as bright as a first magnitude star, appears, in Pisces, the fishes.

Summer Arrives

On Tuesday, June 21, at 9:04 p. m. (Eastern Standard Time), comes the summer solstice, the moment which astronomical habit has decreed shall be the beginning of summer. Then the sun is farthest north in the sky, which means that for residents of the northern hemisphere it rises earliest and sets latest, making this theoretically the longest day of the year. Actually, at this time, the sun is changing its north and south direction very slowly, and there is practically no difference in the length of the day for nearly a week.

The greater duration of sunshine now is one cause of the warm weather of

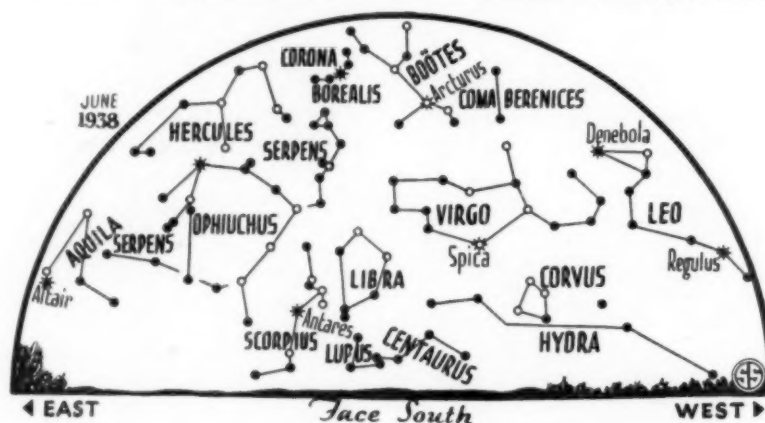
summer, though not the principal one. It is mainly due to the fact that, with the sun so high in the sky during the day, its rays of light and heat fall nearly vertically on the surface of the earth. Hence, they are more concentrated than in December, when they fall at more nearly a grazing angle.

Another way of expressing what happens on June 21 is to say that the sun enters the zodiacal sign of Cancer the crab. The zodiac is a belt across the sky through which the sun, moon and planets move. It is divided into twelve arbitrary areas, which, at present, are purely imaginary, just as much so as the county lines in one of the flat prairie states. Several thousand years ago, the signs of the zodiac corresponded roughly to the constellations along its way, and, in fact, they still bear the same names as the constellations. But, owing to a slow motion of the sky called "precession," the constellations have shifted around to the east so they no longer coincide with the signs.

No Actual Being

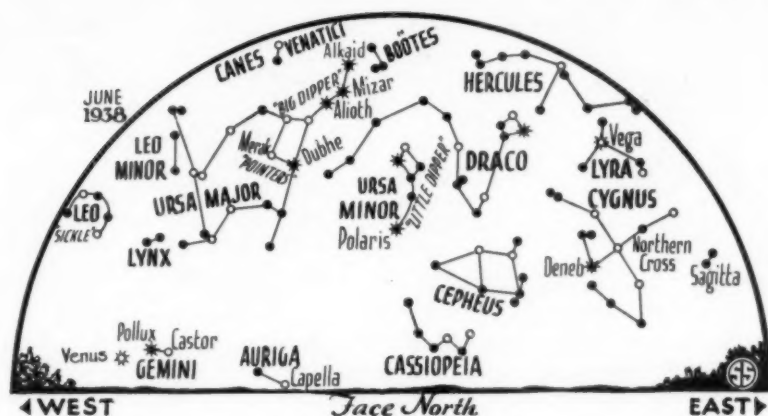
This is one of the many things that shows how ridiculous are the ideas of the astrologers, who profess to predict the future from the position of the stars and planets. One of the important data for their predictions is the sign in which a planet happens to be. Since the signs have no actual being, it is just as reason-

☆ * ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS



FOLLOW THE HANDLE

When you have located the famous Great Dipper, follow the path made by the stars of its handle and extend it to bright Arcturus in Boötes and then to Spica in Virgo. Below is the "cutter's mainsail."



FOLLOW THE POINTERS

But this time instead of letting your eye travel to the north star, go the other way to Leo with the sickle and bright Regulus.

able to suppose that a planet would be affected by passing from one into another as it would be to imagine that the passengers on a ship would be influenced at the instant it crosses the equator or some other imaginary line on the surface of the earth. The falsity of astrology has been abundantly proved, and no astronomer gives it the slightest credence. But many false ideas are still current among large numbers of people, and this is one of them.

During the month of June, the moon goes through its phases as indicated by the table below. The first half of the month will be provided with moonlit evenings, for the benefit of excursionists, etc. On June 30, when it is again ap-

pearing as a narrow crescent in the west, the moon passes Venus. They are closest, however, at 8:39 a. m., when both are invisible. But on the evening of the 30th they will still be in the same general part of the sky, the moon above.

Phases of the Moon

		E. S. T.
First quarter	June 4	11:32 p. m.
Full moon	June 12	6:47 p. m.
Last quarter	June 20	8:52 p. m.
New Moon	June 27	4:10 p. m.
Apogee	June 14	1:00 p. m.
Distance—	252,400 miles.	
Perigee	June 27	8:00 p. m.
Distance—	222,000 miles	

Science News Letter, May 28, 1938

MEDICINE

Common Germs Blamed For Chronic Gall Bladder Disease

Clearing Up of Infection in Teeth and Throats Is Important Part of Treatment Not Formerly Realized

GERMS of fairly ordinary types are the culprits that cause or at least pave the way for chronic gallbladder disease and they must be taken into account in treating the condition. Research showing this was reported by Drs. Martin E. Rehfuss and Guy Nelson of Philadelphia at the meeting of the American Gastro-Enterological Association.

Chronic gallbladder disease exactly like that which makes life miserable for thousands of men and women today

was produced in rabbits, the Philadelphia doctors reported, by repeated injections of small numbers of germs over a long period of time. The germs were obtained from the nose, throat, teeth and lower part of the digestive tract. They included staphylococci, streptococci and typhoid and colon bacilli. A streptococcus from the human digestive tract produced gallbladder disease in nearly half the animals in one study.

In these animals changes in the gallbladder occurred similar to those found

in human gallbladders removed at operation. In addition, the rabbits showed signs of kidney, heart and joint diseases, conditions which are being noticed more and more in association with gallbladder disease in human patients. In about a third of some 900 gallbladder patients, one of the doctors had noticed involvement of muscles, nerves or joints or impairment of heart and blood vessels.

Repeated attacks on the gallbladder by very small germ armies is enough to cause disease in this organ even if the germs are subsequently vanquished by the body and no trace of them found when the gallbladder is removed at operation. At that, a little less than one out of every two gallbladders removed on the operating table were infected, the doctors found in a survey of over two thousand cases of gallbladder removal.

Cleaning up foci of infections in teeth, throats and elsewhere therefore becomes an important part of treatment for chronic gallbladder disease. Specially made vaccines have been used with unusual success at times, they reported, in controlling these infections and the gallbladder condition. The diet of gallbladder patients must also be watched, it was pointed out, to insure their getting enough vitamins A and D. These vitamins are found in fatty substances which gallbladder patients usually cannot tolerate. Butter is recommended as the safest fat as a source of these vitamins.

Look Into 700 Stomachs

After actually looking into the stomachs of more than seven hundred patients suffering with "stomach trouble" during the past years, Drs. William A. Swalm and Lester M. Morrison of Philadelphia find that chronic gastritis is a disease that occurs frequently and is now being recognized by the American medical profession.

Evidence is growing which may suggest that gastritis is a possible forerunner, in some cases, of ulcer and cancer of the stomach, they also pointed out in their report. The research reported was done at the Medical School and Hospital of Temple University in conjunction with Dr. Chevalier Jackson.

To look into the stomach they used an instrument called a gastroscope which is a thin tube with a flexible lower section and an ingenious system of lenses. The gastroscope is passed down the patient's throat into his stomach. Its flexibility and the lenses make it possible for the doctor to move it about and see through the curved lower part of the instrument. Thus it is possible for the

operator to observe the effects of treatment in the stomach, especially in cases of gastritis.

Drs. Swalm and Morrison pointed out the importance of the extensive observation of the treatment of gastritis under direct control of gastroscopic visualization of the stomach and its response to therapy. Experience has shown, furthermore, they pointed out, that X-ray diagnosis of gastritis is unreliable since it is not corroborated by direct visualization. They further pointed out, however, that it cannot be gainsaid that the hypertrophic variety of gastritis can often be detected roentgenologically by the mucosal pattern, particularly in experienced hands.

Drs. Swalm and Morrison further pointed out that certain forms of chronic gastritis can respond satisfactorily to treatment, but that there are two forms which are unresponsive to present methods of treatment. These are the two forms which are particularly suspected to be possible forerunners of cancer and ulcer of the stomach.

In conclusion Drs. Swalm and Morrison made a strong plea for special investigation into new methods of treatment for these two conditions of the stomach. They may be proved later to be of particular importance in cancer prevention.

Science News Letter, May 14, 1938

OCEANOGRAPHY—PHYSICS

Guide Earthquake-Producing Apparatus to Sea Bottom

Kites and Balloons Leave the Sky for the Sea Depths
In New Service for Science; Lava Rivers Do Not Run

A NEW way of mapping the bottom of the ocean has been devised by science. Novel apparatus will create artificial earthquakes on the ocean floor and record the vibrations of the underlying strata as a clue to their make-up.

Kites and balloons, normally inhabitants of the ether up above, will be sent below the surface of the sea to guide mile-long equipment to the bottom and to return it automatically for scientists to inspect when its recording task is done.

A mile-long cable, to which are attached dynamite charges, microphones, recording equipment and clockwork control mechanism, will be strung out along the bottom of the sea, guided only by the kite. The cable serves as the kite's tail. An oil-filled balloon will float the apparatus, freed automatically of ballast, to the surface at the conclusion of the experiments.

Dr. Maurice Ewing and Allyn Vine of Lehigh University, who have already conducted experiments with earthquake-producing equipment moored to a surface craft by means of a long cable, described their new plans before the American Geophysical Union meeting.

Credit for the idea of using the oil-filled balloon as the means of returning the valuable apparatus and the records is given by the two scientists to Auguste Piccard, celebrated stratosphere flyer now preparing for bathysphere exploration.

The kite-and-balloon scheme has been tested in the swimming pool at Lehigh University by means of scale models and is expected to be applicable to any depth required for the ocean-floor studies, they declared. A balloon six feet in diameter and displacing about 100 cubic feet of water will be used with the full-size equipment.

Not only does this ingenious means of placing the earthquake-producing charges and recording apparatus on the bottom save the cost of the extremely long cable ordinarily required, but since the apparatus rests on the bottom free of any connection with a surface ship, the test equipment is free of vibration from surface waves, Mr. Vine pointed out.

The earthquake-producing equipment, which they used off Woods Hole, Mass.,

last summer, consists of three charges of dynamite, microphones to pick up the vibrations of the ocean floor when the dynamite is fired, batteries and clockwork controls. The dynamite fire is controlled by clockwork, as is a release device which drops the ballast required to drag the equipment to the bottom when the charges have been fired.

Lava Rivers Flow Very Slowly

Volcanoes do not pour their rivers of lava down the luckless countryside in a clear hell-broth that runs like water over Niagara to waste forests and plantations with flame. "No thin broth, but a very thick porridge," was the simile used by Dr. T. A. Jaggar, noted volcanologist who lives in a house on the edge of Kilauea's crater.

Rivers of lava do not run; they creep. A mile a day was the speed of the lava flow that threatened the town of Hilo some time ago and had to be stopped by airplane bombs, Dr. Jaggar stated.

The forward creep of one of these streams of thick lava is an impressive and very strange thing to watch, the speaker continued. As it is extruded from the volcano—usually from a crack on its side rather than from the crater—it oozes forth in one big stream. This break up into a large number of smaller streams that flow in close ranks side by side, like a hank of rope. This ropy type of lava is called by a name originated in Hawaii, pahoehoe—pronounced pah-hoey-hoey.

As each streamlet of the pahoehoe pushes itself forward, it roofs itself over with a thick, solid crust, so that the entire stream comes to flow in a tunnel of its own making. Even the forward end of the lava is covered with a thin crust or membrane, which it constantly breaks through and as constantly reforms. The moving tip of a pahoehoe streamlet Dr. Jaggar likened to an elephant's toe.

Stopping the recent flow that menaced Hilo was not a military man's idea,

● Earth Trembles

Information collected by Science Service from seismological observatories and relayed to the U. S. Coast and Geodetic Survey resulted in the location of the following epicenter:

Thursday, May 17, 12:08.7 p. m., E.S.T.

In Makassar Strait, between Islands of Borneo and Celebes. Latitude 1 degree north, longitude, 119 degrees east.

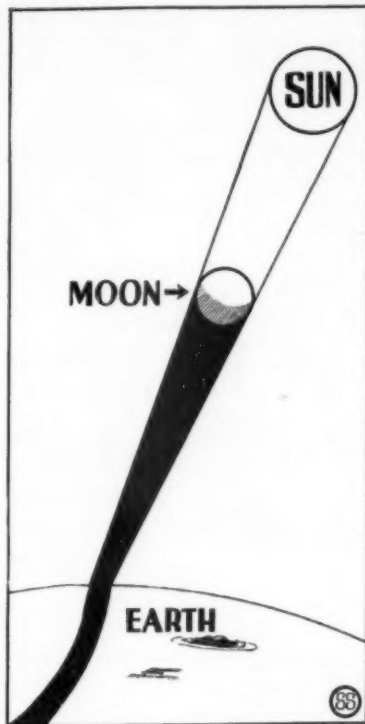
For stations cooperating with Science Service in reporting earthquakes recorded on their seismographs see SNL May 21.

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ECLIPSE MAY 29

The moon will eclipse the sun May 29. But the path of totality streaks across a bleak section of the southern Atlantic Ocean, where there are few accessible islands and little hope of good weather. This diagram shows how an eclipse occurs: the moon comes between the sun and the earth. The path of totality is the moon's shadow or umbra on the earth. A belt (not shown) on each side the path of totality is partially darkened by partial blocking of the sun by the moon. This belt is known as the penumbra.

nor yet his own inspiration, Dr. Jaggar revealed. At first the proposal was to pack a lot of dynamite to the critical point on muleback, but a planter pointed out that bombing planes could not only find the lava tunnels much more easily in the dense forest but could attack them more effectively when found.

Neither was the bombing attack conducted against the moving front of the lava columns, the volcanologist said. That would not have stopped them. In true modern air-warfare style, the planes struck at the base of operations—the heads of the lava streams just as they emerged from the slope of Mauna Loa. With 600-pound bombs of TNT they blasted in the roofs of the tunnels. This permitted the escape of the gases that were the principal source of heat for the lava. With their power supply thus cut off the streams were stopped at their source.

Science News Letter, May 28, 1938

ANTHROPOLOGY

New Fossils Add to Knowledge Of African Man-Like Ape

Canine Tooth Unlike Chimpanzee's in Either Size or Shape; Teeth in Place in Jaw Are Spaced Human Style

By E. N. FALLAIZE

Fellow, Royal Anthropological Society

A NEW connecting link between man and apes is forged by a fossil half-jaw discovered in South Africa. The new-found relic consists of the upper right jaw, with four teeth in place, and part of the bony palate, belonging to *Australopithecus*, the famous man-like ape of Taungs. The discovery is reported by Prof. Robert Broome of the Transvaal Museum. (*Nature*, May 7)

Australopithecus was first recognized and named by Prof. Raymond Dart in 1925, when a fossil skull of a new and primitive type, apparently half-way between chimpanzee and man, was found at the mining center of Taungs in the Transvaal. But this specimen was not full grown, representing a stage of growth of about five years of age. Most scientists, therefore, have since held that this skull did not stand in the human line of descent, but was to be regarded as an immature specimen of a new type of fossil chimpanzee, though in certain respects presenting human resemblances, possibly due to the fact that it was not full grown.

A few months ago Prof. Broome showed that this view was probably wrong, when he announced that he too had found further relics of *Australopithecus* in the form of a number of teeth, which while undoubtedly belonging to the fossil type identified by Dart, were slightly different from the teeth of that skull, approaching even more closely to human teeth.

Prof. Broome's present discovery is much more important than that. The lower canine is so much like the human that at first Prof. Broome hesitated to describe it as belonging to *Australopithecus*. Neither in shape nor size does it bear any close resemblance to the tooth of a chimpanzee.

The crucial discovery, however, is that of the part of the upper jaw. The teeth in position in the upper jaw are the second incisor, the canine, the first premolar and the first molar. The canine

is not much larger than in man, and is worn down to the same height as the second incisor and the first premolar. In the apes the canines are much larger in proportion to the other teeth and sometimes are almost like small tusks. But even more significant is the fact that the second incisor is situated close up to the canine. The importance of this lies in the fact that most students of the teeth of man and the ape are agreed that it is an infallible mark of a human character in dentition, when there is no gap between the front teeth and the canine teeth, as there invariably is in the teeth of the ape.

The preservation of part of the palate is also of the very (Turn to Next Page)

A Symposium on Cancer

Addresses by

H. B. Andervont

Leiv Kreyberg	James Ewing
M. T. Macklin	Emil Novak
Edgar Allen	C. C. Little
S. P. Reimann	W. H. Lewis
Henri Coutard	J. B. Murphy
Gioacchino Failla	

These papers summarize the growing body of scientific knowledge about cancer as it bears on public health problems, the clinical practice of medicine, and experimental biology.

The contributors, representatives of leading laboratories in this country and abroad, are men whose experimental work and observation of cancer cases have contributed significantly to the changing concept of cancer.

Their conclusions are of first importance not only to medical workers in the field of cancerology but to all clinicians, persons interested in public health policies, biologists, biochemists, physiologists, and plant pathologists.

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Two Junes Needed

IF WE mortals really could control the weather, as sometimes wish we could, we would be up against a very difficult problem next month. What this country needs is two kinds of June: a cool wet month, with driving rains, from Illinois west to central Kansas, and a hot, dry one from Indiana east to New England.

This is because of the crop pest situation. In the corn belt the great threats are grasshoppers and chinch bugs. These thrive in hot, dry weather but are drowned, beaten into the earth, and exposed to their natural enemies by cold rains in late spring.

From Michigan and central Indiana eastward, the outstanding enemy is the European corn borer. The flying adults move from field to field most easily in cool, moist weather, so that farmers in its occupied territory have cause to pray for less rain rather than more. A really good dry spell some time in June would prevent a good deal of the damage that otherwise will befall corn and the many other crops the borer infests.

There is a certain amount of overlap in the ranges of chinch bugs and corn borers, so that in that area there is bound to be some trouble, no matter what the weather.

Probably, if a choice had to be made, it would be better to take the weather that would discourage the borer, and to tell grasshopper and chinch bug to come on, and to come a-fightin'. For entomologists have worked out control methods for the two latter pests which are fairly effective, even if expensive, while

for the borer no real control has yet been discovered.

The best that can be done to fight corn borer is to make a thorough clean-up of all stubble in the fields it infests, plowing it under clean and deep, and burning what can't be plowed under. The resting larvae lurk in such trash, and if any of it is left undestroyed, presently there will be enough of the winged adults to re-infest the whole neighborhood.

Science News Letter, May 28, 1938

ASTRONOMY

Clears Astronomical Puzzle On Motions of Double Stars

AN ASTRONOMICAL puzzle on the motions of double stars has been cleared up by Dr. Leopold Infeld, colleague of Prof. Albert Einstein at the Institute of Advanced Study. Dr. Infeld's complex mathematical study entitled "Electromagnetic and Gravitational Radiation" appears in the *Physical Review*, (May 15).

Gravitational radiation may be a new term and concept to many laymen and scientists alike but astronomers have been wondering, for some time, if the effects of energy dissipation through gravity might cause a shift in the orbits of double stars. Theoretically it was suggested that, perhaps, double stars might gradually come closer together due to gravitational radiation.

In Prof. Einstein's theory of relativity the equations expressing the gravitational field have the form of a wave equation. Disturbances in the gravitational field energy are pictured as being propagated by waves through space. Such

disturbances have come to be known as gravitational radiation.

Dr. Infeld, who collaborated with Prof. Einstein recently in writing a new book "Evolution of Physics," has shown mathematically that for the cases of double stars the energy losses in the system, due to gravitational radiation, turn out to be negligible.

"The result," comments Dr. Infeld in the conclusion of his complex mathematical treatise, "shows the astonishingly small role played by the gravitational radiation in the motion of double stars."

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greatest importance. It has enabled Prof. Broome to reconstruct the upper jaw and roof of the mouth of Australopithecus. This reconstruction shows that the sides of the arch made by the teeth, where the molars are set in the jaw, are not parallel, as they are in the gorilla and chimpanzee, but are rounded as they are in man.

Enough of the nasal structure is left to enable Prof. Broome to say that the nose of Australopithecus was very much like that of the chimpanzee; but the incisors and canine teeth are much smaller, snout much narrower and shorter.

Prof. Broome says that he does not propose to discuss at present whether in the light of this new evidence Australopithecus is to be regarded as a descendant of a chimpanzee-like ancestor, or near the common ancestor of man and the chimpanzee. This question then for the moment may be left for future discussion, when further discoveries, which are anticipated, have been made.

Science News Letter, May 28, 1938

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•First Glances at New Books

Additional Reviews
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Physiology

WUNDER DES LEBENS—Bruno Gebhard, with the collaboration of Herbert Michael, Gerhard A. Brecher and Hatto Weiss—*Union Deutsche Verlagsgesellschaft*, Stuttgart, 429 p., 300 illus., 24 RM. The theme of the Berlin Exposition in 1935, *The Wonder of Life*, is presented in this large and beautifully illustrated book. Unfortunately its reading public in this country will be limited to those who can read German, unless the publishers decide to bring out an English translation. Since the book was written with the two-fold purpose of telling the story told by the Exposition and of giving the layman a clear idea of the structure and functioning of the human body in health and disease, it is written in simple German and should not give difficulty, except for technical terms, to those who have a fair knowledge of this language. There is considerable emphasis, as might be expected, on races, on the family and on the desirability of having children. The illustrations are especially noteworthy, both in themselves and as examples of how anatomical and physiological facts can be simply, clearly and strikingly depicted.

Science News Letter, May 28, 1938

Physiology

DAS LEBEN DER FRAU IN GESUNDEN UND KRANKEN TAGEN—Bruno Gebhard—*Union Deutsche Verlagsgesellschaft*, Stuttgart, 232 p., 9.80 RM. A book for and about women, written in sympathetic vein suggesting a father counselling his daughter about her life and its problems including health problems. Those who can read German may be interested in noting the way current German ideas are woven into a book on hygiene for women.

Science News Letter, May 28, 1938

Medicine

INTERNSHIPS AND RESIDENCIES—New York Committee on the Study of Hospital Internships and Residencies—*Commonwealth Fund*, 492 p., \$2.50.

Science News Letter, May 28, 1938

Engineering

A SHORT HISTORY OF NAVAL AND MARINE ENGINEERING—Edgar C. Smith—*Macmillan*, 376 p., illus., \$6. Thirty years of research are behind this history of one of the most important branches of engineering. This is not a history of ships, but a history of the way in which the engineer solved the

many problems that had to be faced with the introduction of steam. The book does not cover the Diesel engine, which has in recent years made growing inroads in the domain of steam. There is an introduction by Major P. J. Cowan, editor of the British technical journal, *Engineering*.

Science News Letter, May 28, 1938

Biology

FEARFULLY AND WONDERFULLY MADE: THE HUMAN ORGANISM IN THE LIGHT OF MODERN SCIENCE—Renée von Eulenburg-Wiener—*Macmillan*, 472 p., \$3.50. Thoughtful and philosophic readers will find much enjoyment in this book in which the author tells how the human organism is made, how it works and how, according to her interpretation of modern science, especially biophysics, it is related to the universe.

Science News Letter, May 28, 1938

Biology

RÉSULTATS SCIENTIFIQUES DU VOYAGE AUX INDES ORIENTALES NÉERLANDAISES DE LL. AA. RR. LE PRINCE ET LA PRINCESSE LÉOPOLD DE BELGIQUE. Vol. II, Fasc. 18, Gastéropodes Marins—Ph. Dautzenberg—*Musée Royal d'Histoire Naturelle de Belgique, Bruxelles*. This monograph, treating of the family Conidae, will be of interest chiefly to taxonomists.

Science News Letter, May 28, 1938

Economics

THE NEXT CENTURY IS AMERICA'S—C. D. Murphy and H. V. Prochnow—*Greenberg*, 244 p., \$2.50. A vote of confidence in America as it is, "decrying modern methods of irresponsible propaganda and short-sighted economic policies," by two Chicago business men with a foreword by Dr. Glenn Frank.

Science News Letter, May 28, 1938

Aeronautics

WHAT ABOUT THE AIRSHIPS?—Commander C. E. Rosendahl—*Scribner's*, 437 p., \$3.50. See SNL, May 7.

Science News Letter, May 28, 1938

Physiology—Psychology

SEX SATISFACTION AND HAPPY MARRIAGE—Alfred Henry Tyrer—*Emerson Books*, 160 p., \$2. Frank, sane advice given by a clergyman with many years of experience in marriage counselling. The book should be helpful to young engaged couples, particularly from homes in which sex is still surrounded with Victorian taboos.

Science News Letter, May 28, 1938

Philosophy

THE INTELLIGENT INDIVIDUAL AND SOCIETY—P. W. Bridgman—*Macmillan*, 305 p., \$2.50. An eminent physicist looks at human thought and the world around us. In the light of an analysis of mental possibilities and limitations, Prof. Bridgman presents in a new aspect such ideas as those of duty, freedom, "rights," morality, justice, race survival, service, idealism.

Science News Letter, May 28, 1938

Sociology—Engineering

THE MASTER PLAN, WITH A DISCUSSION OF THE THEORY OF COMMUNITY LAND PLANNING LEGISLATION—Edward M. Bassett—*Russell Sage Found.*, 151 p., \$2. Most cities and towns of the world have just grown. Now there is arising a science of how to build the communities in which we live. This book should be a handbook for those who are charged with, or take it upon themselves to guide, community development.

Science News Letter, May 28, 1938

Sociology

YOU CAN'T DO THAT—George Seldes—*Modern Age Books*, 307 p., 50 c. Because science and education are sometimes attacked by "the forces attempting, in the name of patriotism, to make a desert of the Bill of Rights" this defense of our liberties will be of interest to workers in those fields.

Science News Letter, May 28, 1938

Geography

THE OCEAN HIGHWAY; New Brunswick, New Jersey to Jacksonville, Florida—Federal Writers' Project of the Works Progress Administration—*Modern Age Books*, 244 p., 95 c. "The third volume to be published in a series of interstate route guides which form part of the American Guide Series of regional, state and local guides prepared by the Federal Writers' Project of the WPA. The entire series of guides, when completed, will highlight the history, resources, and points of interest in an area of more than three million square miles."

Science News Letter, May 28, 1938

Anthropology

ACCULTURATION—Melville J. Herskovits—*Augustin*, 155 p., \$2. A discussion of scientific efforts to analyze the results of contact between peoples of different culture, and suggestions for further research along this line.

Science News Letter, May 28, 1938

•First Glances at New Books

Additional Reviews
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Biography

HELEN KELLER'S JOURNAL—Helen Keller—*Doubleday, Doran*, 313 p., \$2.50. As no one needs introduction for Helen Keller, so no one needs to have pointed out to him the interest of her intimate journal.

Science News Letter, May 28, 1938

Chemistry

THE CHEMISTRY OF PLANT CONSTITUENTS—Ole Gisvold and Charles H. Rogers—*Burgess*, 309 p., \$3.50. A text describing the theory and practice of the science of the chemistry of plants. Printing is by the mimeoprint process.

Science News Letter, May 28, 1938

Physics

AN OUTLINE OF PHYSICS (Rev. ed.)—Albert Edward Caswell—*Macmillan*, 590 p., illus., \$3.75. It is ten years since the first edition of Prof. Caswell's book appeared. In the meantime much has happened in the field of physics which the author now incorporates in this comprehensive text, designed particularly for students who will never take a more advanced course in the subject.

Science News Letter, May 28, 1938

Chemistry

THE DETERMINATION OF THE AMINO ACIDS—Richard J. Block—*Burgess*, 85 p., \$2. A book of laboratory procedure for the specialist in this particular branch of chemistry. It is mimeoprinted, with photo offset illustrations.

Science News Letter, May 28, 1938

Mathematics—Biography

PORTRAITS OF EMINENT MATHEMATICIANS. PORTFOLIO II.—David Eugene Smith—*Scripta Mathematica*, XIII folders, \$3. Here is a new collection of the famous mathematicians of the past. These portfolios are so widely used in schools to decorate the walls of classrooms and offices that this new set of portraits should be welcome as an enlargement of the scope of this excellent series.

Science News Letter, May 28, 1938

Photography

NATURAL COLOR PROCESSES (2d ed.)—Carlton E. Dunn—*American Photographic Co.*, 206 p., \$2.

Science News Letter, May 28, 1938

Crafts

JEWELRY, GEM CUTTING, AND METALCRAFT—William T. Baxter—*Whittlesey*, 224 p., illus., \$2.50. This book is directly designed for amateurs who find leisure-time amusement and instruction in the field of gem cutting and metalcraft. Il-

lustrated with diagrams and photographs, it tells the amateur what tools to use, where to get them and how to use them, and tells him what he may make.

Science News Letter, May 28, 1938

Anthropology

SINGING FOR POWER—Ruth Murray Underhill—*Univ. of California Press*, 158 p., \$2. Contains a large number of Papago Indian songs, some very beautiful, and describes the occasions on which the songs are sung and their purpose. No music is given.

Science News Letter, May 28, 1938

Psychology

REMINISCENCE AND ROTE LEARNING—Lewis B. Ward—*The Psychological Review Co.*, 64 p., \$1. Of interest to teachers as well as to psychologists, is this study conducted at Yale University.

Science News Letter, May 28, 1938

Economics

CURRENT ECONOMIC DELUSIONS AND THEIR PROBABLE FUTURE EFFECTS—E. C. Harwood—*Amer. Inst. for Economic Research*, 112 p., \$1.

Science News Letter, May 28, 1938

Chemistry

NEWER METHODS OF VOLUMETRIC ANALYSIS—Wilhelm Bottger, ed.—*Van Nostrand*, 268 p., \$3.75. This book is a good translation of an excellent text in German which is of interest to all specialized chemists in its field.

Science News Letter, May 28, 1938

Chemistry

COLLOID SYSTEMS—A. von Buzàgh, tr. by Otto B. Darbishire, ed. by William Clayton—*Reinhold*, 311 p., \$9. A very comprehensive and completely indexed volume on the nature of colloidal chemistry. Specialists in this particular branch of chemistry will wish to add it to their reference libraries.

Science News Letter, May 28, 1938

Chemistry

ELEMENTARY PRINCIPLES OF QUALITATIVE ANALYSIS—T. R. Hogness and Warren C. Johnson—*Holt*, 325 p., \$1.40. An excellent text already finding a sizable usage, which is designed for those schools having a separate course in qualitative analysis. In no small part the value of the book lies in its many problems, some of which are solved for the edification of the student, while many more are given to test his ability.

Science News Letter, May 28, 1938

Natural History

MOUNTAINS OF THE MOON; AN EXPEDITION TO THE EQUATORIAL MOUNTAINS OF AFRICA (3rd ed.)—Patrick M. Syngé—*Dutton*, 221 p., illus., \$4. A fascinatingly written account of an expedition to one of the least known, least visited parts of the world. The sense of weirdness, almost to the point of unreality, conveyed by illustrations taken from post-impressionistic paintings is brought sharply home as actual by photographs of vegetation that to temperate-zone eyes looks like nothing earthly.

Science News Letter, May 28, 1938

Crafts

MONEY-MAKING HOBBIES—A. Frederick Collins—*Appleton-Century*, 322 p., \$2. One of the most prolific writers of popular books on applied science here turns his hand to the problem of making money out of hobbies. Things to make with paper, printing, photography, weaving, leather-working and wood-working are only a few of the chapter headings.

Science News Letter, May 28, 1938

Archaeology

THE ARCHAEOLOGICAL SURVEY OF THE HIGH WESTERN PLAINS: Tenth Report—The Black's Fork Culture of Southwest Wyoming—E. B. Renaud—*Univ. of Denver*, 54 p., 12 pl., *Free upon direct application to Dept. of Anthropology, University of Denver.*

Science News Letter, May 28, 1938

Mathematics

COLLEGE ALGEBRA (Rev. ed.)—William L. Hart—*Heath*, 438 p., \$2.24. This revised edition of a well known text has been almost completely rewritten and contains new and original problems which have not appeared in prior work. The same commendable motive for publication is present, namely, an attempt to bridge the gap between ninth grade algebra, imperfectly presented, and college algebra.

Science News Letter, May 28, 1938

Physics

A FIRST COURSE IN PHYSICS FOR COLLEGES (Rev. ed.)—Robert Andrews Millikan, Henry Gordon Gale, and Charles William Edwards—*Ginn*, 774 p., illus., \$4. Here is a revised edition of the book that is the standard college text for many of America's colleges and universities. It is so well known among the teachers that one only needs to say that it has been brought up to date.

Science News Letter, May 28, 1938